FEBRUARY, MDCCCLVI.

THE ZOOLOGIST:

A

POPULAR MONTHLY MAGAZINE

OF

NATURAL HISTORY

AND

JOURNAL FOR RECORDING FACTS & ANECDOTES

RELATING TO

QUADRUPEDS, BIRDS, REPTILES, FISHES, ANNELIDES,
INSECTS, WORMS, ZOOPHYTES, &c.

THEIR HABITS, FOOD, RETREATS, OCCASIONAL APPEARANCE,
MIGRATIONS, NESTS AND YOUNG.

No. CLX.

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Insects and Bird-skins.

MR. J. C. STEVENS will Sell by Auction, at his Great Room, 38, King Street, Covent Garden, on Tuesday, February 12, at One o'clock precisely, the COLLECTION of BRITISH INSECTS of the late W. WIN , Esq., F.L.S., in fine condition; COLEOPTERA and LEPIDOPTERA from BORNEO, some which are new; INSECT CABINET; BIRD-SKINS from Australia, and a few BIRDS EGGS. Catalogues by enclosing a stamped directed envelope to MR. J. C. STEVENS, 3 , King Street, Covent Garden.

Birds' Eggs.

MR. J. C. STEVENS will Sell by Auction, at his Great Room, 38, King Street, Covent Garden, on Friday, March 7, at One o'clock precisely, A COLLECTION OF EGGS, made by JOHN WOLLEY, Jun., Esq., in LAPLAND, during the year 1855. May be viewed on the day before the Sale, and Catalogues had by enclosing two Postage Stamps to MR. J. C. STEVENS, 38, King Street, Covent Garden.

Mr. Westwood remarked, that whereas authors had given the number of antennæ the prawn as four, Mr. Newman had doubled it, and to arrive at this conclusion he ust have taken the threefold branches of two of them as distinct organs.

Mr. Lubbock, in continuation, said that, on this hypothesis, the number of legs ould be quoted as twenty instead of ten.

Read also two papers by Mr. Newman:—

'*Description of two New Species of Thrips.*'—Specimens of these insects were taken a jungle near Mysore, on the leaves of a species of Anacardium, by Major Hamilton, d were sent by that gentleman inclosed in a letter to the Secretary.

'*Descriptions of some Australian Lepidoptera.*'—In this paper the author has scribed fifteen new species of Lepidoptera, taken by Mr. Oxley on the Mount lexander range, in the colony of Victoria.

Note on Oak-galls.

Mr. Westwood read the following extract from the 'Gardener's Chronicle' of ecember 1st:—

"I believe that it was only last year that the attention of the Entomological ociety of London was called to the existence of the hard oak-gall (*Cynips Quercus-etioli*, Linn.) in this country, though previously noticed by Mr. Westwood. But rely it must have been of rare occurrence in this country until of late years, or it ould have been observed before; and even now I believe it is confined to the southern unties of England. At all events I have never seen it in the midland counties, or deed north of Somersetshire, and I should much wish to know if any one has hitherto een this gall-nut further inland than I have mentioned. This may be important to now, as I believe the range of the gall-nut is extending, and with obvious injury to oung oak plantations, so that the gall-fly that produces the nut is becoming an bsolute pest in Devonshire and Somersetshire, and I am led to inquire if anything an be done to arrest its progress. It is very different from the innocuous soft galls pon the leaves, seldom very numerous, and dropping off with the foliage in the utumn. But these gall-nuts of C. Quercus-petioli are mostly persistent upon the ee, and continue there for a long time hard as bullets. They seize upon the young hoots of the year, often the leading shoot in young trees, and cluster at its termina-ion, thus stopping the expansion of the buds by taking up their nutriment, and eeping the trees in a dwarf state. I have now before me young shoots that are rminated by eight or nine of these hard brown galls clustered together; and I ecently noticed in the oak plantations on Worle Hill, near Weston-super-Mare, that any young oaks had been quite ruined by their leading shoots being thus loaded, nd some were absolutely dead. Now I have reason to believe that this attack upon he oaks, at least in this plantation, is of recent origin. Four years ago I first bserved a few on two or three trees, and looked upon them as a curiosity; last year was surprised to observe many more, and the present autumn, in walking through ne portion of the plantations only, and without going out of the path, I counted 1 trees that were more or less subjected to this scourge—for thus it has become. Some, it is true, had only about a score of galls or so upon them, but many had undreds clustered upon their branches thick as grapes, and the smaller trees were vidently drooping and checked in their growth by the absorbing villainous galls. Some of the trees were actually withered and dead, and others had their leading

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shoots killed, with the evident cause burdened upon them. It is clear to me that fresh trees are attacked every year by the increasing insect that produces the galls, and what can be done to stay their assaults? Though I only counted 91 trees in the Worle Hill plantations, I dare say I could have doubled this number by going deeper within the coppice; but say that only these 91 oaks had 50 gall-nuts on a tree—although many had hundreds of them—that only would give more than 4500 of the Cynips to commence the next season with, so that next year instead of only 91 trees attacked I may expect to find thousands, on every tree perhaps throughout the plantations. The mischief is that the oaks are certainly rendered barren by these hard gall-nuts, and wherever they occurred on the larger trees there were no acorns at all produced. It has been suggested that these gall-nuts may be used in the manufacture of ink, but I should doubt to such a profitable extent as to keep the oaks entirely for that purpose; and if not it is but a poor consolation to have ink produced only to record the destruction of plantations made and kept up at some expense in the hope of good timber being some day ripe for sale. Can any suggestion, then, be made upon the subject now, before the Cynipidal hordes have spread to all the oak trees in the country, whether of Quercus robur or Q. sessiliflora?—*Sylvanus, St. John's, near Worcester.*"

Note on Paussidæ.

Mr. Stevens read the following extract of a letter from Mr. R. W. Plant, dated Port Natal, April 16, 1855:—

"In the box I now send you will find forty-seven or forty-eight Paussidæ: this is an uncommon piece of good fortune, and I must give you the history of this lot. I stumbled on the locality by accident, about three months ago, and picked up six. I revisited the spot for several days, though I had five miles to go, without seeing another, till, remembering they preferred sultry weather, I watched for the next opportunity, and was rewarded with ten; afterwards the approach of a thunder-storm was the signal to start, and beside my beetles I generally got a drenching. Respecting their habits I think the notion that they live with the ants, or are at all desirous of their society, is an error: all that I saw were close prisoners and jealously guarded: at first my anxiety to secure them prevented much close or cool observation, but as my box filled my curiosity revived, and at last it was possible to command myself sufficiently to gratify it. The beetles are in the bottom of the tufts of grass, and, owing to the small size and matted nature of the herbage, are very difficult to discover in that position, but it is the business of the ants to find them, and well they perform it. Their holes are usually along the edge of the grass (or at least it is there only they are to be seen), and as each unlucky culprit of a Paussus is found, five or six or more of the ants seize upon and drag him off to their nest. I have seen the beetles, in their efforts to escape, struggle out of the holes, but they are soon overtaken and brought back again. The ants do not kill them on the spot, as they do some other creatures, simply because they can convey them home alive, and the beetle does not seem to possess or use any means of injuring the ants, trusting only to his strength in the struggle, and is consequently soon overpowered by the number of what I take to be his enemies. At first it would appear easy to solve the question by opening the the ants' nests; but as the soil breaks you lose the trace, and they are usually very deep, so that nothing very definite results. I found pieces of elytra, but whether from beetles that had died naturally or had been killed I cannot say. The sum of my observations, therefore, amounts to this,—the Paussi do not seek the ants nor remain with them voluntarily; on the contrary, they use every possible exertion to escape, though not one that I saw succeeded in doing so; they are captives to the ants; and for what other purpose should the latter toil in their capture, but in the pursuit of their natural instinct to secure food wherever it is offered?"

Mr. Stainton read a paper intituled 'On the Spirit with which Scientific Books should be Read and Studied.'

Part 6., Vol. iii., N.S., of the Society's 'Transactions,' recently published, was on the table.—*J. W. D.*

SOCIETY OF BRITISH ENTOMOLOGISTS.

November 2, 1855.—Mr. HARDING, President, in the chair.

Mr. Biggs was elected a subscriber to the Society.

The President announced that he had received from E. W. Buxton, Esq., a pair of Lithosia muscerda for the Society's cabinet.

The President exhibited Depressaria costosa and D. umbellana, bred from Fungi; D. granulosella, bred from wild parsley; Gelechia basalis, bred from thorny sallow; Sciaphila perletana, from wild marjoram, thistles and various plants; Sciaphila subjectana, from the small bugloss.

The President remarked that while on the coast of Kent he took a pupa in a stalk Eupatorium cannabinum, which produced a specimen of Pterophorus Acanthodactylus; he believed the habits of this insect were not known before.

The President also exhibited some specimens of Colias Edusa, with pupæ-cases; these, with Colias Hyale, were taken in some profusion near Darenth Wood.

Mr. Jobson exhibited some specimens of Colias Hyale and C. Edusa; also specimens of Trochilium cynipiformis, bred from the oak; T. formiciformis, bred from the apple; and T. myopæformis, bred from the willow: Zeuzera Æsculi and a species of Adela, taken near Darenth.

November 6, 1855.—Mr. HARDING, President, in the chair.

The President exhibited a box of insects, captured in various parts of the country; among them were many of our rarest Lepidoptera. He likewise exhibited a box of insects taken at Darenth, on the 26th of October, in three hours' collecting; among them were Petasia cassinea, Himera pennaria, Cheimatobia dilutaria, Peronea ferrugana, Simaëthis pariana, Cheimabacche phryganella, Depressaria arenella, D. propinquella, D. umbellana and D. carduella, Gracillaria stigmatella, Chauliodus chærophyllellus and Cerostoma radiatella,—showing that something is to be obtained even at this season.

The Secretary announced the donation from Mr. Stainton of the first volume of his 'Natural History of the British Tineina,' and a vote of thanks to the donor was unanimously carried.—*J. T. N.*

CORNWALL NATURAL HISTORY AND ANTIQUARIAN SOCIETY.

Anniversary Meeting, November, 1855.—The President read the following memorandum, from the pen of Mr. R. Q. Couch:—

New Facts on the Ecdysis or Moulting of Crustacea.

"It is well known that, for a crab to grow, it is necessary that it should cast off its old shell: this it does entire; even the lining of the eyes, lungs, stomach, &c., are all cast off; and thus, after the creature has escaped, the shell seems as perfect as the animal itself; but I could never understand how that broad flat surface inside each claw could be got rid of without injury to the new claw; however, by attentively watching the process in several instances, I observed that in the act of drawing out the new claw the edge is cut through by these flat horny plates, the divided parts immediately closing again, and speedily becoming so adherent as to preclude their being reopened. I have observed another fact:—When crabs cast off their claws and get new ones, the process can take place only in the joint which is nearest the body: if any other be injured they bleed to death; but if the nearest joint be removed there is little blood lost, and over the wound a thin film forms, in the middle of which is a tubercle. The common opinion among naturalists appears to be that the new claw immediately begins to form, and at the next casting of the shell it is perfected, though it be small; but this is incorrect: when the old claw is separated the scar immediately forms, and remains till the creature casts its shell. After the shell is cast the tubercle in the centre of the scar suddenly enlarges, and under it may be discovered a small claw doubled on itself beneath the membrane of the scar: this remains in a soft state until the crab again casts its shell, when the new claw is set at liberty, is straightened out, and becomes hard and calcareous like other parts of the body; so that a claw, instead of being renewed and perfected at once, or at the first casting of the shell, is not so in reality until the shell has been cast the second time."

Mr. E. H. Rodd communicated the following account of

Ornithological Captures during the Past Year.

"The interval between our last annual meeting and the present has been productive of ornithological occurrences in this district quite worthy of notice. The severity of the last winter, almost unparalleled for extent and duration, caused a vast influx of birds, both of the land and water tribes, not only from the northern regions of Europe, but also from our own inland districts. Those of the thrush family were especially remarkable, and so concentrated were the redwings and fieldfares in the Land's End district after the frost had lasted some time, that even at Truro the entire absence of these birds, and nearly of the whole of our common field birds, was the subject of observation. The commoner species of wild fowl flocked in innumerable numbers to our district; but it was observed that there was not such an accession of the rarer Anatidæ as might have been expected. Woodcocks and snipes were everywhere to be found, and the former were observed, from exhaustion and famine, to be strutting about on grass plots adjoining coverts, and even close to houses, seeking for their sustenance like barn-door fowls. The intense frosts, after cementing all the more exposed ground, at last closed up all the avenues of the woodcocks' sources of sustenance in warm sheltered valleys, when, at last, these, with other birds, were often found dead, always more or less exhausted, and with scarcely any flesh on their bodies. Amongst birds of unusual occurrence in this neighbourhood at that time were large numbers of the brambling (*Montifringilla*)—a species that seldom leaves the northern English counties except in very rigorous winters. In nearly all the farm-yards in the neighbourhood of Penzance were these beautiful finches to be seen. During the past year the following remarkable birds have been noticed:—Rosecoloured starling; Land's End, &c.: four instances. Solitary snipe; Cold Harbour Moor, Towednack: not hitherto recorded in the Cornish Fauna. Schinz's tringa; Scilly. Hawfinch; Scilly. Whitefronted wild geese; Scilly. Honey buzzard; Carclew."

Mr. R. Q. Couch, after stating that he had prepared a paper on the subject, which would appear in the Society's 'Report,' read the following abstract:—

On the Metamorphoses of Crustacea.

Mr. Couch prefaced the reading of his abstract by stating that the subject was now attracting much of the attention of naturalists. Professor Bell had given, in his work on the Crustacea lately finished, a summary of all that was known on the subject down to the present year, and had expressed an intention of bringing regularly before the Linnean Society such additional information as he could collect: he had already quoted from the Reports of this Society, and was desirous of procuring as much additional information from it as this Society could give. The early part of this paper was occupied with a brief recapitulation of the doctrine of the metamorphoses of crabs and lobsters, as formerly described by the author, and which is now acknowledged by all authorities. He referred to Professor Bell's work on the Crustacea, in which the whole process is particularly described; but the author remarked that all previous researches had been directed especially to the establishment of the doctrine of metamorphosis and to the particular description of each species. It was his intention in future to give figures and specific descriptions of every species: for as the young, in their partially developed form, are free, and move about in the surrounding waters, they are presented to the researches of the naturalist as species or fully-formed animals, and in times past have been described as such; and thus species, and even genera, of animals have been unnecessarily multiplied. The paper then described minutely the early states of the species mentioned above, and dwelt elaborately upon the young state of several species of Mysis which do not undergo a change.

Mr. R. Q. Couch contributed the following

Notice of the Capture of Planes Linnæana in Mount's Bay.

"The occurrence of Planes Linnæana in Mount's Bay is well worthy the attention of this Society, not only from its extreme rarity as a British species, but also on account of the probable source whence it was derived. There are three specimens in the British Museum, placed there by Dr. Leech; these were probably obtained from the Devonshire coast, and are all, I believe, that can be said to have been recognized on our shores, though I think there is a specimen in the Museum at Plymouth. Some of the smaller specimens which have been shown me as belonging to this species, and which have been taken both in Cornwall and Devonshire, have, on examination, turned out to be the young of Carcinas Mænas, just as it has begun to assume the adult specific markings. Such specimens I have frequently captured in Mount's Bay among the tangle at the roots of the Laminaria digitata, and have afterwards reared them into the full adult characteristics. I am of opinion that the Planes Linnæana cannot be considered as really a British species in any other light than as an occasional visitor. If it occurred regularly it might be considered as an established portion of the Fauna of Cornwall; or if it appeared in flocks it might be looked on as a migratory species; but inasmuch as it occurs singly, and after long intervals, its occurrence must, I think, be considered, in some measure, accidental. It is chiefly found as an inhabitant of the Sargasso, or Gulf-weed, which is found in such enormous fields in the Atlantic, and which is drifted from the shores of the West Indies and the surrounding mainland."

NOTICES OF NEW BOOKS.

'*General Outline of the Organization of the Animal Kingdom, and Manual of Comparative Anatomy.*' By THOMAS RYMER JONES, F.R.S., Professor of Comparative Anatomy in King's College, London, late Fullerian Professor of Physiology to the Royal Institution of Great Britain, &c., &c. Second Edition. London: Van Voorst. 1855. 842 pp. 8vo; 400 engravings on wood: price £1 11*s.* 6*d.*

THIS second edition of a very useful compilation is immeasurably superior to the first, and will be hailed with pleasure by the students of comparative anatomy. Mr. Jones is a pleasing and flowery writer, and has the tact to interweave the labours of comparative anatomists with each other, and to blend them together so harmoniously that it is impossible for the student to detect the quarry from whence each stone of the well-built fabric was originally hewn. In every respect the second edition is an improvement. The author wisely expunges from the Preface itself a very uncalled-for attack on those philosophical naturalists who trace, in the multitudinous facts spread before them, evidence of a design far more important, far more indicative of Omniscience and Omnipotence, than the mere facts themselves, however wonderful. Mr. Jones is one of those anatomists whom philosophers must always delight to see working in the right direction, but in whom all attemps to undervalue the far-seeing and synthetic speculations of maturer minds are ill-judged: they remind one of the Cockney who, returning from a trip on the Continent, declared that French, Italians and Germans were alike badly off for a language. The objectionable paragraph is entirely removed, and is replaced by the following:—

"Since the publication of the preceding edition, however, great and important advances have been made in our knowledge: many and earnest have been the labourers in this enticing field, and proportionately encouraging have been the results. The indefatigable industry of Professor Owen, conspicuous in every department of our science, has, by his invaluable analysis of the vertebrate skeleton, not only remodelled the nomenclature of the osteologist, but placed in the hands of the Geological student a light wherewith to guide his steps amid the darkness of departed worlds. The improvements in our microscopes, and the zeal of our microscopists, have much advanced our knowledge of the Infusorial organisms. The researches of Van Beneden and Siebold, relative to the embryogeny of parasitic worms, open before us a new field of research, while the observations of Steenstrup, Dalyell and Agassiz on the 'alternation of generations' among the Hydriform Polyps and Acalephæ, promise results of the utmost interest to the naturalist."

Again, directly we commence the work, which really begins at Chapter II., we find that the second edition is a new work, and one which, in a great many instances, brings down the wave of discovery, if I may be allowed to use such an expression, almost to the day of publication. This is as it should be: whatever we do in science we should at least master what has been previously done; to adopt the views or to vouch for the supposed discoveries of another is a matter of mere option; to display ignorance of them is inexcusable.

In illustrations there is also a great improvement; nearly a hundred new ones are added; and many of those, which serve to illustrate other of Mr. Van Voorst's publications, have been omitted. Some of the worst entomological illustrations still remain; those at pp. 384, 390 and 403 have neither truth nor taste to recommend them; the flea at p. 350 appears to vary in the number of tarsal joints from eight as a maximum to five as a minimum: on the contrary, the anatomical illustrations of this part of the work are good and taken from the best sources.

The letter-press is always pleasing and for the most part explicit, lucid and trustworthy. Two faults, however, become apparent to the practical naturalist: first, that Mr. Jones has not always gone to the fountain-head for knowledge; secondly, that he has not always gone to those streams nearest the fountain-head, where the knowledge is most pure and undefiled. However plainly these facts may present themselves to the mind, it is neither easy nor pleasant to convince the reader of the justice of the assertion; still the attempt must be made.

First, then, as to not drawing or describing from the objects themselves, or, in other words, going to the fountain-head for knowledge:

very many of the engravings are palpable copies, and this copying sometimes leads to inextricable confusion. Thus, at page 656 is a figure, number 298: there is but one on the page; above it is this description, "The accompanying figure (fig. 298) represents the ear of a very large fish, the Lophius piscatorius:" below it is this inscription, "No. 298, auditory apparatus of the Skate." The object of giving the English name as well as the Latin is doubtless a good one, namely, to render the explanation familiar to the mind of the merest tyro in the science, but in this instance the English and Latin don't mean the same thing—they have no connexion with each other. Turning back to page 634 we are told, "The skeleton of the Cartilaginous Fishes will require a distinct notice, inasmuch as they present very remarkable peculiarities of no inconsiderable interest." This is true, and such of my readers as are not ichthyologists, and I am sure none more so than Mr. Jones himself, will be startled to learn that the Fishing Frog (*Lophius piscatorius*) is an osseous, the Skate (*Raia batis*) a cartilaginous fish: the two fishes have no points of similarity, and the names have never before been combined as meaning the same thing: the explanation beneath the figure is given in the second edition only. Now, widely as the osseous and cartilaginous structures differ from each other, highly interesting as are these differences, Mr. Jones has so contrived to confuse them in this instance that it is absolutely impossible to tell which he is describing and figuring: in fact, the conviction is irresistably forced on the mind that Mr. Jones has copied figure 298 from some other author, has forgotten what it is and whence he derived it, and of course is unable to explain.

Secondly, as to not quoting first hand. The labours of Desmarest, Gray, Gould and Waterhouse have brought to our doors a vast store of knowledge with respect to the marsupial mammals of Australia: when we regard the vast unexplored interior, and compare it with the narrow external strip which we have examined, we shall at once perceive that our knowledge is still most incomplete, but nevertheless that it is good and sound as far as it goes, and is perfectly familiar to every zealous inquirer: such zealous inquirer is puzzled on reading the following passage published at the close of 1855:—"These animals (Marsupials) are peculiar to the Australian and American continents; nay, in Australia, so anomalous in all its productions, with one or two exceptions, and these perhaps brought there by accidental importation, all the quadrupeds are constructed after the Marsupial type."—*General Outline, p. 760, line* 17. I wish the reader to refer, and to see that the passage is given not merely verbatim but entire; that is, that there is no paragraph, either preceding or following, to qualify or modify its comprehensive scope and meaning. This brief passage contains two great and hackneyed mistakes: first, Marsupials are not peculiar to Australia and America; secondly, "all the quadrupeds, with one or two exceptions," are not constructed on the marsupial type. Let us take these propositions in order. First, the Eastern Archipelago should have been added to the geographical range of the Marsupials. The genus Cuscus, or that portion of the family Phalangistidæ which has the tip of the tail naked and warty, occurs in Celebes, Amboyna, Banda, Waigiou, Timor, New Guinea and New Ireland, but *never* in Australia or America. That infinitesimal portion of New Guinea which has been explored, and explored in the most hasty and incomplete manner, produces seven marsupials, only one of which occurs in Australia; so that the proposed geographical restriction of marsupials is fallacious. Now, about the quadrupeds of Australia being altogether Marsupial: this often-repeated error has been as often satisfactorily pointed out and corrected: the Cheiroptera and Glires should have been excepted. I find the following passage in a journal, the Natural History of which is in general carefully compiled:—"The marsupials are peculiar to America and Australia: in Australia, if we except the dog, which has probably been introduced by man, all the Mammalia are marsupial." I well knew this passage was erroneous, and, as a matter of course, I knew it was not original; still, believing it the text of Mr. Jones's commentary, I determined to trace it to its source. I find that Mr. Waterhouse is the authority, and there is none higher; but the passage in question has unfortunately had its brains knocked out by the gentlemen who have borrowed it: here it is:—"Cheiroptera are not represented by any known marsupial animals, and the Rodents are represented by a single species only; *the hiatus is filled up, in both cases, by placental species, for both Bats and Rodents are tolerably numerous in Australia*, and if we except the dog, which it is probable has been introduced by man, these are the only placental Mammalia found on that continent." The italicised portion has been omitted in *every* citation of this passage that has come under my notice, and the inference is I think fair that Mr. Jones has been misled by one or other of the copyers, and that he is not aware that at that early period truly native placentals were known to be *tolerably*, and are now known to be *very*, numerous in Australia. It may be said that the geographical distribution of animals is not the province of the anatomist, but, if so, the subject should have been avoided altogether, not treated erroneously.

These are fair examples of the errors which have crept into this useful book, as a natural consequence of trusting too implicitly the statements of others; they will not impede the course of the student so much as they annoy the more experienced reader, for it is utterly impossible for the beginner not to reap an abundant harvest of sound knowledge from Mr. Jones's volume, and although I have attempted candidly to explain that errors are to be detected, they are neither so numerous nor so important, as to detract materially from the value of a volume which has been produced at great cost, and which is most profusely and admirably illustrated.

'*The Entomologist's Annual for* 1856.' London: Van Voorst. 1856. 12mo, 174 pp. letter-press; one coloured Plate: *price* 2*s*. 6*d*.

Most of my readers are already aware that the 'Entomologist's Annual' has again appeared; and not a few of them already possess it through the instrumentality of the editor of the 'Zoologist.' In several particulars it is an improvement on its predecessor; but in many respects it is obnoxious to the same objection, *viz*. that it seems to strain at elevating Entomology above its rank in the Catalogue of Sciences, and Tinearism above its rank in the science of Entomology: indeed there seems not a little danger of Tinearism becoming in itself a science whose professors regard any other knowledge as superfluous.

The contents of the 'Annual' are so well known to the readers of the 'Zoologist,' through advertisements on its wrapper, that I need not formally recapitulate them. A new feature, and a pleasant one, is the list of Entomologists, and this, though perhaps unintentionally, is the most amusing chapter in the book: there is something quite diverting in the way in which the Misters and the Esquires are portioned out. Thus, Edward Newman, a printer on a very small scale, in one of the narrowest and dirtiest streets in London, is an Esquire, and many of his congeners enjoy a like dignity; whilst F. T. Hudson, the distinguished optician, of Stockwell Street, Greenwich, W. P. Hatfield, the Newark chemist, and many others of like standing, are plain Misters. A step lower still in this digested list are Entomologists who have no title at all; the examples are John Brown, E. Bull, Robert Drane, J. Fox, Finley Fraser, G. Freason, Edmund Graham, C. S. Gregson, William Harrison, George Hodge, James Holt, S. Keetley, S. Lineker, S. H. Riley, T. Riley, J. L. Rix, R. Slater, W. Spencer, Joseph Stafford and W. C. Unwin; these gentlemen are neither Misters nor Esquires: what have they done to be thus denuded of prefix and affix? perhaps, however, they are members of the Society of Friends, eschew titles and "like to be despised." My own education has been very imperfect in a knowledge of those comparative degrees which are here so carefully preserved. J. Bladon, Esq., J. A. Brewer, Esq., Mr. Foxcroft, Mr. Standish, Joseph Stafford and W. C. Unwin are measured by some standard I have not learned; and I think Mr. Stainton should have placed, at the head of the list, the scale which he applied to entomologists when adapting them to this bed of Procrustes. One would like to know whether magnitude, gentility, learning or income was the test applied.

But it is not merely the gradus of the entomologists that affords matter of agreeable speculation; the habitats, or the want of them, is equally suggestive of hypothesis; as an instance, we learn that Mr. Saunders, although generally esteemed a well-to-do gentleman, has in reality no homestead at all. Does he sleep on the steps at Lloyd's? Or repose at the foot of the marble Huskisson? Mr. Wollaston, on the other hand, rejoices in two habitats; while studying the 'Annual' over his cozey fireside at "25, Thurloe Square, Brompton," his hair will stand on end to find that he is "At present in Madeira." The omissions are also very curious. One of our very best Lepidopterists, Mr. Bouchard; the best of our Orthopterists, Mr. G. R. Gray; the best of our Crustaceologists, Mr. R. Q. Couch; the best of our Physiologists, Mr. Bowerbank; and the *greatest*, most kind-hearted and most voluminous of all our Entomologists, Mr. Walker, are ignored altogether. Some of the minims of science might escape even a Tinearist, but how can these stars of the first magnitude be hidden from his view? Are they such *extra sizes* in knowledge, in the world's esteem, or in stature, that he could not clip them to the length of his bed?

To the names of many of the entomologists is appended a little bit of autobiography—an outline portrait of the author, in all probability, sketched by himself: thus Mr. Westwood depicts himself as "Economic Entomology, and insects of all orders from all parts of the world, especially if of peculiar form." This certainly does great credit to his head and heart. Mr. Weaver is labelled "British insects of all orders: specimens always on sale or exchange." Mr. Lubbock "studies, but has no collection:" he studies books, I presume: blind guides, Mr. Lubbock! see how Mr. Stainton handles them a few pages further on.

The chapters 'Lepidoptera, by the Editor,' and 'Observations on British Tineina,' are good and useful, bringing down our knowledge to the very day of publication. Of the same character also are 'Notes of British Geodephaga, by Mr. Dawson,' 'Notes on Aculeate Hymenoptera, by Mr. Smith,' and 'Instructions in Collecting Aculeate Hymenoptera, by Mr. Smith:' these seem to me the right materials for an entomological annual, and we shall see whether space cannot be spared for a few extracts in future pages of the 'Zoologist.' Other chapters are not so pleasant to the mental palate: I may instance the 'Ghent to Glogau and Stettin to Schauffhausen' paper. I will not enter minutely into my cause of dislike, but simply say I do not like it. Whether this chapter is intended as ironical, amusing or instructive, whether a mere burlesque on our German brethren, or a report of the state of Tinearism in Germany, I cannot make out: the parrots, the first-rate German pudding, the tremendously hot days, the pet canaries and the gnat-bites appear to me out of place, and I cannot help thinking that something better might have been made out of a journey *through* such a country and *among* such a people.

I now arrive at the Reviews, and here amidst much that is good there is much that is very objectionable; objectionable, because harsh, ill-timed, in bad taste, and uncalled for: let the reader judge of this matter: here are some of the passages I complain of:—

I. From review of Guenée's 'Species Général des Lepidoptères, Noctuélites.' Observe, the truth of the allegation is admitted: the italics are not in the original.

"On two points the author has developed new crotchets; both highly *absurd;*—in the first place, he puts after the specific name of the species, not that of the writer who gave it that name, but that of the author who first described and figured the insect at all, whether he gave it any name or not: thus Tryphæna pronuba, Linnæus, becomes Tryphæna pronuba, Albin. Now Albin never called the insect pronuba at all: why then should it be called pronuba, Albin? Linnæus was the first who named it pronuba, and therefore, according to the rule universal in Zoology, except among certain *demented* Lepidopterists, we say pronuba, Linnæus. A more amusingly *absurd* instance of the same *nonsense* is the Anophia Ramburii, Clerck; Clerck never called it Ramburii—how forsooth could he, as Dr. Rambur was not born till long after Clerck was dead? Clerck figured this insect as Leucomelas, but Linnæus described another species under that name, and so the Leucomelas, Clerck, must necessarily take the next oldest name, Ramburii, Boisduval; but according to the new crotchet, appended to the name Ramburii must come Clerck, because he first figured the insect! *Has absurdity its limits?*"

I beg to assure Mr. Stainton that his view of applying the authority to a name is quite as incorrect as M. Guenée's; and that under no theory of nomenclature can there be a Tryphæna pronuba of Linnæus.

II. The entire notice of Curtis's 'British Entomology:' the italics are not in the original.

"All entomologists agree in declaring the plates in this work to contain the best Entomological figures extant — they are 768 in number, embracing all the orders, and representing a species in each of the more important genera. *The letterpress is short in quantity and very deficient in quality, and, in fact, had better be considered as not there: the tyro would be led into numberless errors by resting his faith upon it.*"

I think those who are acquainted with Mr. Curtis will say that he is a consummate artist and engraver: his figures are exquisite: some explanation of them was required, and he gave, respecting each, what information he possessed. I admit it would have been far better to have made 'British Entomology' a *partnership* work, after the fashion of 'English Botany,' in which the author, Sir J. E. Smith, and the artist, Mr. Sowerby, confine themselves strictly to their respective department, but I cannot go further than this: I cannot think it desirable to notice in this harsh manner works that are the performance of the last, rather than of the present generation of men: neither can I forget that these very volumes contain descriptions of Diptera by Mr. Haliday, which, in philosophical treatment and minute accuracy, immeasurably transcend any descriptions in our language.

III. The entire notice of Westwood and Humphrey's 'British Moths:' the italics are not in the original.

"The letterpress is inferior to Stephens, and the plates far inferior to Wood: the important distinguishing feature is the figures of the larvæ; these are copied from various foreign works, and where the foreign author had mistaken or confused two larvæ the error is repeated. *The latter part of the second volume is probably a good sample of how badly a scientific book may be written, by an unscrupulous author, with little knowledge of the subject, copying wholesale from previous authors, who were themselves not trustworthy.* We trust the day when such books can be written on Entomology is now past; an inquiring spirit is abroad, which will not accept such trash, even though in the form of quartos, half-bound in morocco."

Mr. Stainton is fully aware that the Council of the Royal Society has unanimously awarded one of the two royal medals this year to Mr. Westwood for his various entomological labours; and I believe that the work above criticised was held to be the *chef-d'œuvre* of our most industrious fellow-labourer. Those entomologists whose lives shall be prolonged for another quarter of a century will be able to pronounce dispassionately on the merits of Mr. Westwood's labours. It is a curious speculation whether the Council of the Royal Society or Mr. Stainton is in the wrong: one or the other has certainly committed a capital error, and both as certainly assume the tone of infallibility. I have my private opinion of Mr. Westwood's lucubrations, but I am not reviewing him here.

Of Kirby and Spence's 'Introduction to Entomology,' Mr. Stainton speaks as a work of two volumes, and gives the contents of Vols. I. and II. Is it possible that Mr. Stainton, the self-elected and autocratic expositor and critic of our bibliography is unacquainted with Vols. III. and IV., constituting in themselves the most learned and elaborate 'Introduction to Entomology' that was ever written?

'*Annals and Magazine of Natural History*.' Nos. 96 and 97, dated December, 1855, and January, 1856; *price* 2*s*. 6*d*. each. London: Taylor and Francis, Red Lion Court, Fleet Street.

No. 96 contains the following papers:—

'On the Batrachian Ranunculi of Britain.' By Charles C. Babington, M.A., F.R.S., &c.

'On the Mechanism of the Aquatic Respiration, and on the Structure of the Organs of Breathing in Invertebrate Animals.' By Thomas Williams, M.D. Lond.

'On the Genera of Mollusca, and on the Genus Assiminia in particular.' By Dr. J. E. Gray, F.R.S., &c.

'A few Remarks on the Brachiopoda.' By Thomas Davidson, Esq., F.G.S.

'On the Phenomena of the Reproduction of the Chitons.' By William Clark, Esq.

'Note on Linaria Sepium of Allman.' By Charles C. Babington, M.A., F.R.S., &c.

Bibliographical Notices:—Catalogue of the Genera and Subgenera of Birds contained in the British Museum; by G. R. Gray, F.L.S. Descriptive and Illustrated Catalogue of the Histological Series contained in the Museum of the Royal College of Surgeons; prepared for the Microscope; vol. ii.

Proceedings of Societies:—Zoological.

Miscellaneous:—Shropshire Mollusca; by J. Gwyn Jeffreys. Note on the Arrested Development of the Tadpole of the Common Frog; by W. Davies. List of Species of Mollusca obtained by Professor Goodsir from Spitzbergen; by R. M'Andrew, Esq.

No. 97 contains the following papers:—

'On the Conjugation of Cocconeis, Cymbella and Amphora, together with some Remarks on Amphiphora alata? *Kg*.' By H. J. Carter, Esq.

'Description of a New Species of Clausilia from the neighbourhood of Cheltenham.' By A. Schmidt.

'Memoir on the Indian Species of Shrews.' By Edward Blyth, Esq. With Notes by Robert F. Tomes, Esq.

'On the Mechanism of Aquatic Respiration, and on the Structure of the Organs of Breathing in Invertebrate Animals.' By Thomas Williams, M.D. Lond.

'On the Origin of the Geographical Distribution of Crustacea.' By James D. Dana. [Extracted from Silliman's Journal.]

'On Anthracosia, a Fossil Genus of the Family Unionidæ.' By William King, Professor of Mineralogy and Geology in Queen's College, Galway.

'On the Genus Assiminia.'

Bibliographical Notices:—Recherches sur les Crinoïdes du Terrain Carbonifère de la Belgique; par L. de Koninck et H. le Hon. A Lecture on the Geological History of Newbury, Berks; by T. Rupert Jones, F.G.S.

Proceedings of Societies:—Zoological, Botanical of Edinburgh.

Miscellaneous:—Observations on the Blistering Beetles of the Neighbourhood of Monte Video; by M. A. Courbon [extracted from the Comptes Rendus, December 3, 1855, p. 1003]. Unusual Dearth of Algæ in 1855; by John Cocks. Observations on Echini perforating the Granite of Brittany; by M. Valenciennes [extracted from the Comptes Rendus, November 5, 1855, p. 755]. New Species of Mammals and Birds; by M. Eversmann [extracted from the Bulletin de la Société Impériale des Naturalistes de Moscou, 1853]. Description of a New Bird from Guatemala, forming the Type of a New Genus; by John Gould, F.R.S., &c. The late Mr. Newport.

Mr. Clark's observations show that the young, or perhaps more properly ova, of Chiton are discharged continuously for about fifteen minutes, at the rate of one or two every second: they were of a pale yellow colour and subglobular form, and appeared invested with, and connected by, a viscous substance discharged simultaneously with the ova; for two days they were quiescent; on the third day they emerged from their investment and swam rapidly about the saucer; at this early date they seemed to possess very nearly the figure of the parents: on the twenty-ninth and thirtieth days all natatory motion ceased.

The Clausilia noticed by Professor Schmidt as having occurred at Cheltenham is the C. Mortilleti of Dumont, published in 1853 in the 'Bulletin de la Société d'Histoire Naturelle de Savoie,' p. 78. It is said to be at once distinguishable from all those forms which are so closely allied both to C. ventricosa, C. lineolata and C. plicatula by the circumstance that the striæ at the back of the cervix are rather more distant from each other than the striæ of the penultimate whorl.

'*Quarterly Journal of Microscopical Science, including the Transactions of the Microscopical Society of London.*' Edited by EDWIN LANKESTER, M.D., F.R.S., F.L.S., and GEORGE BUSK, F.R.C.S.E., F.R.S., F.L.S. London: Churchill. No. XIV., dated January, 1856. 102 pp. letter-press; 7 Plates: *price* 4*s*.

This part contains the following papers:—

'On the Formation and Development of the Vegetable Cell.' By F. H. Wenham.

'On Certain Conditions of Dental Tissues.' By John Tomes, F.R.S., Surgeon-Dentist to the Middlesex Hospital.

'On the Filamentous, Long-horned Diatomaceæ, with a Description of two new Species.' By Thomas Brightwell, Esq., F.L.S.

'Observations on the Practical Application of the Microscope.' By J. Hepworth, Esq.

'On a case of Green-Pigment Degeneration of the Heart.' By Dr. Thudichum.

'On the Actinophrys Sol.' By J. Weston, Esq., H.E.I.C.

'On the Impregnation and Germination of Algæ.' By M. Pringsheim. [Abridged from the Reports of the Berlin Academy.]

'On the course of the Amyloid Degeneration.' By Rudolph Virchow. [Abstracted from the Archiv f. Patholog. Anatomie und Physiologie. Bd. viii. p. 364.]

Reviews:—'Researches on the Structure and Formation of the Vegetable Cell;' by Dr. Pringsheim [from the Bot. Zeitung for May, 1855]. 'A Manual of Marine Zoology for the British Isles;' by Philip Henry Gosse. 'A Handbook to the Marine Aquarium;' by Philip Henry Gosse. 'General Outline of the Organization of the Animal Kingdom, and Manual of Comparative Anatomy;' by Thomas Rymer Jones.

Notes and Correspondence:—Finders and Indicators. On Micrometers applied to Microscopes. Cilia in Unicellular Plants. Remarks on Mr. Wenham's paper on Aperture of Object-glasses. Mohl on Chlorophyll. On the Microscopical Structure of the Victoria Regia [extracted from the Proceedings of the Botanical Society of Edinburgh]. The Stomachs of the Polygastrica.

Proceedings of Societies:—Microscopical. [This report begins with the meeting of March, 1855: surely the Microscopical Society would find its own account in using a little more dispatch and activity in the publication of its Proceedings: as it is we rarely hear of them until all interest in the subject has passed away.] Royal.

Zoophytology.

I may observe that the numbering of the Plates is conducted on some new principle that requires explanation: here is the series in this part: I., VII., VIII., VI., VII., VIII., VX.: some of these appear to face the wrong way, and the volume is referred to as Vol. IIII. These, I suppose, are the eccentricities of Microscopic genius.

The Present Position of the Salmon Question, considered Physiologically. By R. Knox, M.D., F.R.S.E., &c.

The salmon question has two aspects, a physiological and an economical. The first alone concerns me, and, I presume, all scientific zoologists; the second is not altogether a national question, although the Bills submitted to Parliament annually on the subject of the salmon fisheries might lead one to suppose that it was; it is a question of importance simply to the proprietors of salmon fisheries. The adding to the amount of national food is no doubt at all times a matter of importance; but the supply of salmon in the markets of Britain can scarcely ever interest the bulk of the nation: on this point I speak with diffidence, the data not being before me; but of certain facts any one may assure himself by a few judiciously-timed visits to the great markets for the supply of fish: "the increasing scarcity of salmon," "the falling off in the supplies," "the inclemency of the season," are the never-failing excuses for high prices, notwithstanding the successive discoveries of ice-packing, stake and bag-net fishing, Norwegian, Dutch and Labrador supplies. And now we are assured that all this is to be overcome by artificial breeding of the salmon: I, for one, will be delighted to see the accomplishment of this promise; the chief mover in it is one of my most esteemed personal friends, Dr. Esdaile: whatever energy, prudence, tact and an intense love of scientific truth can effect will be accomplished by my friend; but the struggle in this case seems to me to be with Nature, whose laws are either not known or not acted on when discovered. Great promises were held out in France that supplies of the finest trout, equal to any demand, were immediately to be furnished from the Moselle. Have these promises been fulfilled? During last autumn I looked into the markets of Paris and Brussels: in those of Paris I saw a very few ill-conditioned salmon; of trout there were none: in Brussels, notwithstanding its advantages of railwaycommunication with the adjoining countries, salmon is seldom under six shillings a pound. I distrust the promises of speculators; with them Nature has no laws that require being noticed. From the economical, let me return to the physiological view, which must ever form the basis of every operation which has a reference to the laws of life, whether the question concerns salmon or men.

On my return from Africa and the European Continent in 1822, one of my earliest visits was to the rivers of South Scotland in which I had angled when a boy: there I, of course, found the fish called parr, as I had left it, equally mysterious—equally abundant—equally despised. To solve the difficult questions which I knew were wrapped up in the history of this little fish would have required me to reside on the banks of a salmon-river, and this I could not do. When, in 1827 or 1828, the Parliamentary Reports were published, I naturally expected that some inquirers, favourably situated, and with leisure and means at their command, would have endeavoured at least to solve, by direct observation, experiment or otherwise, some of the interesting physiological questions involved in the salmon question; but a careful perusal of all the documents then published showed me that no such inquiry had ever been attempted by any scientific person. To fill up the gap in the natural history of the salmon was, therefore, my next aim, and I selected a small trouting river, the Whitadder, as the field best adapted for *observation;* this method I chose in preference to that of *experiment*, for reasons which I have already explained. The inquiry, commenced in 1826 or 1827, has extended from that period to the present day: the young salmon in every stage of their development, from the preserves or ponds in Perthshire, are now before me, thanks to the kindness of my friend, Mr. Buist, from whom and from Dr. Esdaile I have received the fullest information in respect of the great experiment now in progress at Stormontfield. That experiment has already produced singular results: like the Egyptian antiquities, the solution of one difficulty has only led to the establishment of many more. A few words will suffice to explain this to the readers of the 'Zoologist.'

Prior to the commencement of my inquiries just alluded to, the food of the grown salmon was not known: the period of the incubation of the salmon-egg had been merely guessed at; the importance of the Entomostraca, or microscopic shell-fish, as the sole, or nearly the sole food of certain valuable fishes, as the herring, vendace, the finer lake trouts and others, had never been even surmised; but naturalists were aware that salmon ascended the fresh-water streams in order to spawn; that the period for spawning was early in winter or late in autumn;

that the young salmon appeared in the rivers in May, and quitted them for the sea, along with the spawned fish generally during that month; that the young return during the same summer and autumn as grilses, that is, salmon of considerable size; and that whilst in fresh-water the grown salmon constantly deteriorates.

In addition, there was a general belief that the fish called parr* was a peculiar species of the salmon-kind, although Willughby had proved experimentally, or was held to have done so, that with the milt of the male parr the ova of the grown salmon may be impregnated; and Mr. Hutchinson, of Carlisle, in 1786, had scraped off the scales from a May smolt, and shown that underneath these scales the fish precisely resembled what we call parr. It was also generally admitted that parr were never found but in rivers frequented by salmon or salmon-trout, a statement I also firmly believed in until I had fished the Kale, the Tyne and a small stream in the vale of Guisborough. Since the period of the publication of my earliest memoirs on these subjects in the 'Transactions of the Royal Society of Edinburgh,' Mr. Young, of Invershin, has proved experimentally—1st. That the smolt (young salmon) of May descends to the sea and returns from the sea to the river in June or early in July—*i. e.* in from six weeks to two months—a well-grown fish of several pounds weight. This is certain: its growth from a smolt a few inches in length and a few ounces in weight to a three, four, five or even eight-pound fish is rapid beyond what could be imagined. 2nd. The same careful observer has proved that, whilst an inhabitant of the fresh waters, the salmon does not feed, but loses daily in weight and quality, and would perish but for its return to the ocean and to the use of that food which I proved many years ago to be essential to its well being. But there remains still to be solved the two difficult questions—namely, what is the age of the May smolt? what is the winter parr?—the fish which I proved, by direct and oft-repeated observation, to be present in salmon rivers during every month of the year; to have the strange peculiarity of a milt developed in the male and an undeveloped roe in the female; to be found in every part of the river, from its source to its embouchure; and to be seemingly absent in some rivers, though frequented by salmon-trout, if not by salmon?

The question of the age of the May smolt was some time ago considered as settled by the Drumlanrig experiments; I never did, and appeal to all I have written and said on the subject as proofs of this assertion; I knew these experiments not to be trustworthy, though they obtained the approbation of the Royal Society of Edinburgh. By these experiments it was attempted to be shown that the ova of the salmon deposited, let us say in November, 1850, left the gravel in April, 1851, and continued, under the form of little parrs, during the whole of 1851, until the month of May of 1852, when, being transformed into May smolts, they left the river for the ocean. This *theory*, for such it was, has been completely refuted — 1st, by Mr. Young, of Invershin; and, 2ndly, by the experiments now being performed at Stormontfield, in Perthshire, by my friends, Dr. Esdaile and Mr. Buist: many thousand ova of salmon were placed under the gravel in November and December, 1853: in April and May, 1854, the young from these ova had quitted the gravel, and were at large in the boxes prepared for their reception; some were allowed to escape from the boxes also provided for them, they having, from the period of their birth and appearance in the waters, been confined in boxes for nearly six weeks; at this time they measured about an inch and a half in length; that is to say, that having been confined in boxes from the period of their birth in April and May until June, they grew only about half an inch: the exact date of the admission to the ponds is not stated, a circumstance to be regretted in the history of a fish which *we know* can grow and does grow, when at liberty, from two or three ounces to four pounds weight in five or six weeks; but during the five or six weeks they remained in the boxes they did not grow, and I confess that I should have felt surprised if they had grown. From the June of 1854 they remained in the ponds until the spring (again it is not stated at what time) of 1855; by this time they had grown to three or four inches in length, but had not altered in other respects: on the 2nd of May, 1855, they were compared with *smolts* in the river, descending to the sea; they were thought not to be yet ready for their migration seaward; the two-year theory men said that they would require another year in the ponds, and so they would had the ponds been as small as they were at Drumlanrig; but unfortunately for their theory, on the 17th of *May*, 1855, it was found that vast numbers of these young fish had become metamorphosed into smolts, and it was agreed on to open the pond-sluice and allow them to depart for the river and the ocean. They did not, however, commence their voyage until the 24th of May: about half became smolts, and went off to the river, and, it is presumed, to the sea; some were marked in order to ascertain if they reached the ocean; many of these must have done so, for they returned to the river in from six weeks to two months grown fish, from three and a half to eight or nine pounds in weight.

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* In Annandale the fishermen always held the parr to be a young salmon.

Of the 300,000 young fish about half still remain undeveloped in the ponds as parrs; in other words, and in plain language, they have not as yet undergone their last metamorphosis—they have not thrown off their generic characters common to them with all the Salmonidæ; they still retain the dentition, red spots and dark spots and parr-markings, which all the Salmonidæ, whatever they are afterwards to become, exhibit when young. Amongst these I have been assured may be found the so-called male parr with the milt fully developed, whilst in the female the roe, as usual, is at its minimum, the precise condition we find them in in the rivers themselves. Now what are these fishes? what will become of them? will they grow into salmon or remain in the ponds, retaining their generic dress—a dwarf salmon, with the further anomaly that the male acquires a full-developed milt, the female remaining with an undeveloped roe?

In the absence of positive facts required to determine these sufficiently important zoological and physiological questions, it may still be remarked that the true age of the *May smolt* of the *rivers* has not been determined; in plain terms, experimenters, without being aware of it, have been simply experimenting on the metamorphosis of the salmon in confined localities; his natural history in *the river* is still to be made out. It is no doubt quite possible that, by a physiological law peculiar, or nearly so, to the Salmonidæ, a certain amount of the ova of one incubation may become fully-developed smolts in one year, others not until two years have elapsed, and a still larger portion may never proceed beyond their generic state, and, remaining in the rivers, form, together with those whose destiny is different, that vast assemblage of small fish known by the name of parr; whilst others of the more favourably disposed in respect of their development may assume the character of May smolts in five or six weeks from the time they leave the gravel. Thus there may exist at one and the same time in a salmon-river young salmon of various ages though of one incubation, together with a certain number which may cease to grow, retaining their generic characters; but this is mere speculation and must continue to be so until the natural history of the various kinds of salmon be fully investigated. After that will come the consideration of the economical view of this question, which cannot be correctly decided until the natural history difficulties be solved. These difficulties increase instead of diminish by the late experiments at Stormontfield, for I find it asserted that *none of the young salmon*, in the *winter of the year* in which they first came *through the gravel*, had the milt *developed*, but that those which are now there, this being their second winter, are found to have the milt largely developed, as is known to take place in such numbers in the winter parr of rivers. This curious fact, could it be altogether depended on, is an answer to those who assert that all young salmon leave the river in the May following the year of their birth, for were this the case no such thing as the *winter parr full of milt* ought any where to be found. Again, my esteemed friend, Mr. Buist, informs me by letter that the young salmon now (November, 1855) in the ponds of Stormontfield, are no larger than they were last year at this time.

It is quite a mistake to imagine that it is only at the approach of or during the winter months that certain parr acquire a largely-developed milt; a reference to my little work, 'Fish and Fishings in Scotland,' will convince any one that mere parr (young salmon ?) may be found in the rivers at all seasons of the year with the milt fully developed. "On the 3rd of September thirteen parr were caught in the Tweed between the Beild Bridge and Palmudie; of these two only were females, the rest males; some were eight and a half inches long, others only four or five. In the largest the milts were enormously developed." Now to which class of smolts are we to refer these small fishes? Again, on the 30th of July, 1832, six parr were caught with the artificial fly at Romano Bridge, on the Lyne, a tributary of the Tweed: they were of the usual size, averaging probably five inches; all were males with the milts large. Do we find the grown salmon with the milts large in July? In the Eddlestone Water, a tributary of the Tweed, *smolts* abounded in the stream in vast numbers on the 29th of May; they were from four to five inches in length, and were rapidly migrating; by the 29th of the same month they had all left the stream, and yet, on the 1st of June, in the Tweed, a little lower down the stream, parr were taken seven inches and three quarters in length, whilst their brethren, three to four inches in length, had become smolts and fled to the ocean. Now examine, as I have done, hundreds and hundreds of the smolts on their way to the ocean in May, and you will never find in one of these the milt in the slightest degree altered or *exhibiting any appearance* of its *ever having been so.* I have stated several other difficulties in the history of the Salmonidæ in the work already quoted, and to that I beg leave to refer the reader.

Summary of Facts and Opinions.

As early as the times of Ray and Willughby it was known that the salmon ascended rivers from the ocean to deposit their ova or eggs under the gravel of fresh-water streams, and that the young springing from these eggs appeared in the rivers as smolts, or silvery-scaled fish, in May, and in May only; but it was not determined whether the May smolt was the product of the incubation of the preceding winter or of the one or ones before that; in other words, the *age* of the *May smolt*, that is, of the young of the salmon, after it has undergone its last metamorphosis before descending to the ocean, had not been determined. This problem is still unsolved.

2. At the period I allude to it was also perfectly well known that numerous small fish, with natural history characters seemingly identical with young salmon before they have undergone their last metamorphosis, were to be found *at all times* in salmon rivers; that these questionable and dubious fish were male and female; that they were of various sizes and strongly resembled young salmon in shape; that the male acquired occasionally a well-developed milt capable of fecundating artificially the ova of a full-grown salmon, whilst, on the contrary, the roe of the female of these fishes was never found developed. Some naturalists fancied these little fishes to be a peculiar kind or species of fish; practical fishermen believed them to be simply the young of the salmon; the physiological difficulties in the way of such opinions remain just as they were. I proved, however, by direct observation that in a few days or weeks after the smolts had descended to the ocean, these peculiar salmon-resembling fish, known by various names as parr, brandling, &c., were to be taken larger than the smolts which had just left; that the milt was developed in these same fishes at times when no such thing happened in the grown salmon, and that therefore their whole history was still a mystery. To this was added the fact, which I believe to be correct, that in some salmon-frequented rivers the parr (the fish I speak of) is not found.

3. The habitat of the salmon whilst in the ocean is not known: its rapid growth in a few weeks from a May smolt to a well-grown salmon has been proved experimentally, so also has the fact that salmon do not feed in fresh waters, but fall off constantly and would perish if not permitted to return to the ocean.

4. The transplanting of salmon and salmon-trout into fresh waters, as a permanent residence, has uniformly failed.

5. The metamorphoses of the salmon from the egg to the smolt have not been accurately traced, the changes having been noted only in those subjected to restraint in artificial ponds and reservoirs. By the Drumlanrig experiments the fact was made out, that by confining the young in small fresh-water ponds the metamorphosis of the young

salmon from a parr, or, as I would call it, a *generic fish*, to a smolt might be prolonged for a year at least; some experiments made on the Dee, near Kircudbright, extended the retardation of the development to another year, and so on; or, in other words, the young of the salmon might, under certain circumstances, continue to hold their *generic* characters for an indefinite period, instead of assuming their last metamorphosis. There was nothing novel in such experiments, the same having been proved to happen in the development of the Batrachia. But that which is curious, and which still requires explanation, is, that numerous—I had almost said innumerable—small fishes, obviously affiliated, if not directly sprung from, the salmon, continue to occupy salmon rivers throughout the year, whilst thousands and thousands, not larger, and many smaller, have undergone their last metamorphosis and migrated to the unknown recesses of the ocean. Of those which migrate in May, I have never observed the roe or the milt to be in the slightest degree altered, or even to look as if it had ever undergone a change; whilst, in the dubious fish remaining in the river, the milt, as is well known, becomes highly developed. Is it a law, then, that of the ova of a single incubation a certain number become fully developed after a residence in the fresh waters of a few weeks; a certain number at the end of a year; a still greater number never, but, retaining their generic dress, continue in this dwarfish state in the fresh-water rivers? These are the appearances the question assumes at present, to solve or explain which both methods will no doubt be required, that, namely, by direct observation and that by experiment.

Economically: salmon are gregarious wild animals, submitting to no restraint; their abundance or scarcity depend on circumstances over which man has little or no control; but as they breed in confined streams, the inhabitants of all civilized countries will succeed, as is their wont and nature, in destroying them, by attacking the spawning fish and her brood. This is in accordance with man's seeming mission on earth—that of a destroyer of Nature's works: in Southern Africa you can predict the proximity of civilized man by the wilderness which moves before him, in advance, marking his all-destroying character.

R. KNOX.

Meissen House, Upper Clapton,
December, 1855.

Anecdote of a Fox.—Some six years ago Mr. Brockman and his hounds met at or near to Waldershare Park, the seat of the Earl of Guildford, and, after drawing several covers blank, came across Mr. Gordon, the gamekeeper, who, after talking the matter over with Mr. Brockman, observed, "Do you see that cedar-tree standing in the park, near to the Wilderness? A fox has lately used that tree, and possibly you now may find him." Although the proposition seemed so preposterous, to draw for a fox in a tree, still, knowing Gordon to be a matter-of-fact man, away went the sportsman and hounds to the tree. After whooping and hallooing under it for some time, no fox was moved, and the laugh was becoming pretty general against Gordon, who, nothing daunted, then advised that a man should go up the tree, and beat it with a long stick: this was done, and, to the astonishment of the field, something at last began to move near the top, very dark, much resembling a martin-cat, and making its way from bough to bough towards the ground, when at length down plumped in front of the hounds as fine a fox as ever was seen. Away went the fox, hounds and horses, pug putting his head straight to the park, and, wonderful to relate, for the first two hundred yards the little wily animal gained upon its pursuers, showing the extraordinary speed which a fox possesses. At length the long strides of the fox-hounds began to tell, and the fox turned towards the steward's house, when, after a whimper or two and a crash, it was killed in the steward's garden. The narrator has now the brush of this fox suspended in his parlour—a very dark one, almost sable, with a handsome tag at the end.—*Sussex Express, of January* 5, 1856. *Communicated by the Rev. Arthur Hussey, of Rottingdean.*

Deer feeding on Horse-chestnuts.—I am surprised to see it stated (Zool. 4913), as a new or strange fact in Natural History, that deer feed on the fruit of the horse-chestnut. The truth is, and I thought it had been notorious, that they are very fond of these nuts; and on this account perhaps, as well as for the sake of ornament, horse-chestnut trees are frequently planted and cherished in parks. I could name a deer park, in which is a noble mansion; and, as I well remember to have heard many years ago, on authority that I cannot doubt, the younger members of the family were in the habit sometimes of collecting the nuts of the horse-chestnut and distributing them from their chamber windows, with a view to draw the deer near the mansion; and the deer were readily attracted by so tempting a bait. Is the origin of the name "*horse*-chestnut" as stated in the 'Zoologist' correct? And will our English horses eat the nuts? I had always supposed the epithet to have been given rather on account of the size and coarseness of the fruit, and its uneatable nature. Pigs refuse the nuts; at least I have several times tried the experiment with my own pigs, and never knew them to eat one.—*W. T. Bree; Allesley Rectory, January* 12, 1856.

Deer feeding on the Horse-chestnut.—The Rev. Arthur Hussey mentions having seen deer feeding on the fruit of the horse-chestnut. In Donnington Park are herds of fallow and red deer, both of which I have frequently seen feeding upon this fruit. It is rather an interesting sight to watch a group of fallow deer searching amongst the fallen leaves for them, which they do with considerable care: this species of deer seems particularly partial to this fruit, and they consume them daily in the autumn, as fast as they drop from the trees.—*John Joseph Briggs; King's Newton, December* 6, 1855.

Piscivorous propensity of the Water Campagnol.—Some naturalists seem to entertain a doubt whether this animal will feed upon fish. A friend of mine assures me that frequently, when he has been fishing in the Trent, towards evening, and thrown his fish upon the bank, a water rat has crept out of his hole and filched one or two of them, and carried them into it. He has watched a rat whilst performing this feat on several occasions.—*Id.*

Black Hawfinch.—Mr. Hall, naturalist, of the City Road, has just brought me a hawfinch, which had been kept in confinement and fed on hemp-seed for six years: its head, neck and back were quite black, and all the feathers of the breast and belly were more or less particoloured, black being intermixed with the usual colouring: abundance of instances have occurred of this change of plumage in bullfinches, but I do not recollect another in the hawfinch. It may be amusing to some of my readers to know that the owner of this bird considered it a nightingale.—*Edward Newman; January* 15, 1856.

Popular Fallacies about Birds.—The country people have a notion that cuckoos turn to hawks in the winter, and the keepers in this neighbourhood destroy them both on this account and because they suppose that in the summer the cuckoos suck pheasants' eggs. A somewhat similar idea prevails that the land rail or corn crake turns to the water rail in the winter, but I have positive euidence to the contrary, for a land rail was shot here last week, namely, on the 3rd of January: this winter occurrence of the land rail is very uncommon with us. On the same day on which the land rail was shot we saw several sea-gulls.—*J. C. Dale; Glanville's Wootton, January* 12, 1856.

Late stay of the Swallow Tribe.—In the 'Zoologist' for January, 1856, I observe that a correspondent, writing from this place, mentions the 11th of November as the day he last saw a swallow. As I have seen both swallows and martins some two or three weeks later, I will now give you the exact dates from my note-book, together with some few observations and extracts from the same, and I may possibly, at a future period (should you wish it), describe what has come under my observation with regard to the migration of swallows, during a residence of some years in this neighbourhood.

1839. April 21. Observed two swallows.
1840. April 15. Saw three swallows.
1841. April 27. Saw first swallow.
„ „ 28. Saw a martin.
„ November 3. Last swallow seen.
1842. April 23. Observed a swallow.
„ December 2. Saw last swallow.
1852. April 13. Saw first swallow. Wind E.: therm. 56°.
„ November 13. Observed a few swallows. Wind S.E.
1853. April 12. Observed first swallow. Wind W.: therm. 50°.
„ November 22. Saw a swallow and three martins. Wind E.
1854. April 15. Saw several swallows and martins.
„ September 7. Saw several sand martins.
„ November. Observed both swallows and martins till about the middle of the month.

1855. April 8, 4 o'clock P.M. Saw three swallows hawking over the mill-dam. Wind N.W.: therm. 59° at 1 o'clock P.M.

„ April 28. Observed two sand martins.

1855. November 24. Saw last swallows.

„ December 2, 4 o'clock P.M. Observed eight martins flying round the garden, and occasionally alighting on the perpendicular face of the wall of a house near my garden-gate, to which they would cling for a few seconds, and then, dropping off, whirl round, returning to the same spot, seemingly quite unconscious of my presence and that of several others: they seemed bent on effecting an entrance under the eaves of the house, by a small opening they had discovered near a water-pipe that had been carried through the wall: they were, I believe, all young birds of the season, as they appeared small, their tails being also shorter than in the adults; they were weak on the wing, but that may have arisen from their being benumbed by the cold, the thermometer standing at 44° only at the above hour. There had been a bright sun during the greater part of the day, but I had observed a white frost in the morning. I conclude that these late birds were merely seeking a roosting-place for the night, and not a place of concealment for the winter, although I might have been excused, according to Cuvier,* White,† &c., had I thought they were taking up their winter quarters; but I have not sufficient faith in the theory to induce me to unslate a part of the roof to seek for them, which might be done, however, at a trifling cost, provided permission were obtained.—*H. W. Hadfield; High Cliff, Ventnor, Isle of Wight, January* 18, 1856.

[Captain Hadfield's proposed notes on the migration of swallows will be very acceptable.—*E. N.*]

Anecdote of the Turtle Dove (Columba turtur).—Early in August of this year (1855), an adult specimen of the Columba turtur appeared among my pigeons, feeding with them by day and retiring with them to their house at night. This continued for about three weeks, during which time it showed no greater disinclination to domesticity than the fantails and other pigeons with whom it had associated. After this, however, it began to absent itself, at first for a day or so, then returning, but these periodical departures were gradually extended in duration, till at length, merely reappearing at intervals for a few hours, it finally disappeared late in September.—*W. W. Wingfield; Gulval Vicarage, near Penzance. Communicated by Edward Hearle Rodd, Esq.*

Recent occurrence of the Great Bustard in Berkshire.—On Thursday, January 3, 1856, as a boy about nine years of age was on his way from Hungerford to a lone farm about a mile off, on the road towards Salisbury, with his brother's dinner, at twelve o'clock, he saw a large red bird on the ground, fluttering about, near the edge of a piece of turnips. He went close up to the bird, and observed that it had a broken leg: he tried to take hold of it, but the bird "pecked at him, bit his fingers and put out his great wings." He caught hold of one of them, and dragged the bird along the ground by it for nearly a quarter of a mile to the farm, where a farming man killed it by breaking its neck, that the boy, as he said, "might carry it easier." The boy says the bird was quite clean when he first saw it, but that he made it dirty by dragging it along the field. The bird passed through the hands of two or three persons, and came at length into the possession of W. H. Rowland, Esq., of Hungerford, who sent it up to Mr. Leadbeater, of Brewer Street, to be preserved. Mr. Rowland did me the favour to call upon me on Saturday, the 12th inst., and went with me to Brewer Street, that I might see the specimen. Mr. Leadbeater had examined the inside of the bird, and had saved the sexual part in spirit, which showed that it was a young male. The bird appeared to be about eighteen or twenty months old, and was, as I believe, a bird of the season of 1854. The fracture of the bone of the leg, with the skin torn through, about half way between the true heel and the knee, did not appear as if produced by gun shot, nor was there a single perforation in any other part of the skin of the bird. The wound was too high up to have been caused by a trap, and perhaps the accident had occurred by the bustard getting his leg entangled among the bars of sheep-hurdles, and making efforts to get loose. The wound was apparently of some days standing, and had bled considerably. That the bird was weak and exhausted may be safely inferred from its allowing a boy to drag it along the ground by the wing, so courageous and fightable as this species is known to be when in health; there was, moreover, very little blood within the skin where the neck was broken. The soft parts had been irrecoverably made away with, or I should have examined the neck with great interest.—*W. Yarrell; Ryder Street, St. James'.*

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* 'Le Règne Animal,' p. 374 (Hirundo riparia), "Il paroît constant qu'elle s'engourdit pendant l'hiver, et même qu'elle passe cet saison au fond de l'eau des marais."

† 'Natural History of Selborne,' p. 107 (Letter to Hon. D. Barrington, 'Migration of Swallows'), ".... seem to justify you in your suspicions that at least many of the swallow kind do not leave us in the winter, but lay themselves up in a torpid state." Page 302 ('Sand Martins'), ".... and gives great reason to suppose that they do not leave their wild haunts at all, but are secreted amidst the clefts and caverns of those abrupt cliffs."

Occurrence of the Bittern at Lewes.—Two bitterns were brought me last Saturday, both killed in this parish during the week.—*G. Grantham; Barcombe, Lewes, December* 22, 1855.

Savage Conduct of a Tame Drake.—Having taken considerable trouble, for several years past, in breeding and domesticating wild ducks at this place, I have now often to boast of eighty or one hundred couple of wild ducks to be seen on the pools during the hard weather and when the smaller and less sheltered waters are frozen up: at this time of year I desire the keeper to supply the ducks with barley in the straw and grains after brewing, for them to feed upon, and this induces many of the wild ducks to remain all the year through, and to breed here in the summer months, an account of which, and of the difficulty often met with in rearing the young ones, in consequence of the large pike, crows and other vermin attacking the old birds on the nests and the young ducks when first hatched, appeared some time ago in another periodical publication; but this year I had to encounter another kind of enemy I little anticipated. In the secluded parts of the range of pools here the wild ducks are accustomed often to make their nests close to the edge of the water and underneath the ledges of projecting rocks which overhang the pools: there being, however, a well-preserved fox-covert along one side of one of the larger pools, the poor ducks, while sitting, often are taken off their nests by the foxes, and the eggs left for the rats to feed upon, which they will do most voraciously, and sometimes in the scuffle with the foxes the eggs may be seen all rolled into the water, and are then totally destroyed. Last breeding season, a farmer, whose farm-yard is but a short distance from one of the pools, from which there is a kind of horse-road down to a drinking-place for his cattle, had a couple of white Aylesbury ducks and a mallard made him a present of; these three confined themselves for several months to the farm-yard and about the ricks, and were generally put up at night time, but in an evil hour they determined to follow the path leading to the pools, and there regale themselves with an excursion up and down the water, and pay a visit to the wild ducks which frequented the place; but though their colours were so different,—as is the case with the white and pied pheasants here,—there appeared to exist no annoyance or reluctance to allow them to approach the others, and both kinds seemed to do very well, except that the tame ducks unwisely were seen occasionally to land and preen their feathers underneath the projecting ledges of the rocks before mentioned, and close to where the foxes were accustomed to pass in their nightly perambulations, and quite within their hearing in the day time: no harm, however, occurred for a considerable time, till one of the white ducks was found one morning minus its head, the rest having been left untouched by the foxes, who had plenty of rabbits and other food to feed themselves with. How much or how long the white mallard grieved for his dear departed spouse is uncertain, for having another still left he appeared not to take on inordinately: in a few weeks afterwards his other spouse made a nest away from home, which some other tame ducks never ventured to do, and having selected a place too near to the haunts of the foxes her nursery cares were soon over, for she one night disappeared altogether, as might have been expected: her sorrowing husband now mourned for his loss in earnest, and might be seen slowly swimming all over the pool, calling, in his low subdued note, for his absent helpmate; but this proving of no avail, and having the use of his wings, he soon began to take short flights round about, and from one pool to another, calling mournfully to his lost duck, but finding no alleviation to his sorrows he immediately paid his addresses to a wild duck then sitting upon nine eggs and near hatching: so pertinacious was he in his suit that he refused the poor duck any respite, and insisted upon her quitting her nest and coming upon the pool to listen to his amorous appeals, and consort with him: this lasted for some time, till at last he actually pulled and drove the poor duck off her nest, and made her desert it and leave the place altogether, disdaining the white mallard's overtures and pretended adoration. But he was not to be baffled in pursuit of a third spouse, and he immediately took to another duck sitting on thirteen eggs, and, following out the same system with this one as with the former duck, he at last destroyed every one of the eggs, which were found strewed about under water near the nest; but here again the faithful duck would have nothing to do with this Turk-like, white-turbaned suitor. Still this inexorable mallard once more assailed a third duck, sitting, like the two former, on ten eggs, and after driving her from her nest and harassing her in every possible way, he finally forced her into a soft muddy place, from which the poor duck, after many personal assaults by the mallard, could not extricate herself, and was found smothered. Thus had this implacable animal destroyed three wild ducks' nests and one of the old birds as well, within the space of about ten days; and instead of boldly making up to some young unmarried duck or widow of the tame kind, or even wild ones, of which there were plenty about, nothing would assuage his passion but this persevering prosecution of his lawless desires, and the ultimate destruction of three anticipated hopeful families of young wild ducks—sad emblem and example of what too often happens in human life. Finding the havoc which was thus being made amongst the wild ducks, I ordered this tyrant of the waters—as nothing else would keep him in order—to be shot and given to the foxes, which was accordingly immediately done.—*W. H. Slaney; Hatton Hall, January*, 1856.

The Sea-Snake Story a Fiction.—In the November number of the 'Zoologist' (Zool. 4896) I notice an extract from an American paper, respecting the capture of the "great American snake." You have probably since learned that the account is an unmitigated hoax, manufactured by a newspaper editor, while on a summer vacation, for the purpose of furnishing material for his editorial correspondence.—*Spencer F. Baird; Smithsonian Institution, Washington, U.S., December* 28, 1855.

The supposed New Flounder.—Mr. Higgins is very fearful that it may be supposed by some readers of my note in the December number (Zool. 4914) that he has been a *particeps criminis* in the experiments there described as having been performed on the poor little flounders by the unfeeling fisher boys. I am confident that my correspondent's enthusiastic love of Natural History ought to and will protect him from any such suspicion. I cannot see how such a malversation of meaning can occur to any one. I may say that having again communicated with Mr. Higgins and Mr. Yarrell on the subject, the former still believes it distinct as a species, the latter still believes it a variety of the common flounder.—*Edward Newman.*

Antennæ of the Prawn.—In the January number of the 'Zoologist' (Zool. 4968), under the Proceedings of the Entomological Society, there is a note read by Mr. Newman as 'A fact bearing on the Function of Antennæ.' In this note the following lines occur:—"Milne-Edwards considers the shorter or inner pair (of antennæ) as auditory organs:" .... "But Mr. Spence Bate, in a paper lately published in the 'Annals' (No. 91, dated July) attempts exactly to reverse this theory, contending, at great length, that the long exterior antennæ are auditory, the shorter ones olfactory," &c. What is here placed to the account of Milne-Edwards *should have been given to Mr. Spence Bate*, and *vice versâ*. That this is the case the following passage from Vol. I. of the 'Histoire Naturelle des Crustacés,' p. 124, will show:—"Chez la Langouste, le milieu de la membrane qui bouche l'ouverture externe du tubercule *auditif*, est occupé par une ouverture qui communique avec l'organ en forme de galette, dont il vient d'être question, et chez la plupart des Brachyures elle est remplacée en totalité par un petit disque osseux plus ou moins mobile. Dans le Maia et quelques autres Crustacés à courte queue, la disposition de cette espèce d'opercule est très curieux (pl. 12, fig. 10 *), nous avons constaté, M. Audouin et moi, que de son bord antérieur il naît une lame osseuse assez large; qui s'en seperan à angle droit, se dirige en haut vers l'organ, en forme de galette, et se termine en pointe; près de sa base, ce prolongement lamelleux est percé par un grand ouverture ovalaire, et cette espèce de fenêtre est bouchée par une membrane mince et elastique, que nous appellerons *la membrane auditive interne*, et pres de la quelle le nerf auditif paraît se terminer; .... du tubercule *auditif*, et qui, par sa forme, rapeller un peu *l'etrier de l'oreille humane*." Again, p. 125, "L'existence de la longue tige rigide, formée par les antennes de la seconde paire et en communication avec *l'organ auditif*, paraît être une autre circonstance de nature à faciliter la perception *des sons;* cette opinion avait déjà été émise par M. Strauss et nous paraît s'accorder très-bien avec divers resultats obtenus par M. Savait," &c. In the paper to which you refer as published in the 'Annals' by myself the following passage occurs:—"The next question we have to consider is to which sense either of these two sets of organs belongs; whether the upper (internal) belongs to the auditory, and the lower (external) to the olfactory, as I shall endeavour to prove, or *vice versâ*, as maintained by Prof. Milne-Edwards," &c. Dr. Farre on the Macroura, Mr. Huxley on the Stomapoda, and this last, published in the 'Annals,' on the Brachyura, all by independent evidence support the idea of the external antenna being an *olfactory* organ, and therefore opposed to the whole of the Continental writers, including Blainville, Edwards and Audouin, and lately Von Siebold. The very interesting observations of Mr. Warington on the habits of the living animal directly confirm the deductions, made by us from the structural organization, that the external or second antenna is an organ of smell, and the internal or first antenna is an organ of hearing. I am sure that, in justice to me, you will communicate this to the Entomological Society, and publish the same in your next number, as correcting the mistake, in the Proceedings of the Entomological Society, which is published in the 'Zoologist,' as quoting from my paper views opposite to that which it contains.—*C. Spence Bate; Plymouth, January* 8, 1856.

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* Here Milne-Edwards figures the organ belonging to the external antenna.

[I have to express my sincere regret for the blunder which Mr. Spence Bate has pointed out, and will take care that the requisite alteration be made before the paper is reprinted in the 'Proceedings of the Entomological Society.' The reader, however, will please to observe, that, however great the unintentional injury I have done to Milne-Edwards and Mr. Spence Bate by the transposition of their clashing inferences, still my position remains intact; for my object is simply to show the difficulty which ever attends the assigning of functions to organs which have no homologues in animals with whose *senses* we are really acquainted.—*Edward Newman.*]

Captures of Lepidoptera in North Wales.—Seeing Mr. Ashworth's list in the 'Zoologist' for September, induces me to give another, having met with many species not named in his list, collected in the months of July, August and September, in the years 1853, 1854 and 1855, in the northern parts of Flintshire, Denbighshire and Carnarvonshire. To give an entire list of all I met with would not be useful, as many species common to most districts are to be met with in North Wales. A brief summary of those I have met with may not be out of place: of Papilionidæ I met with twenty-four species; in Sphingidæ I was less fortunate, having only met with four species; in Bombyces, twenty species; in Noctuidæ, one hundred species; in Pyralidæ, twenty-one species; in Geometridæ, seventy-six, one of which deserves particular notice; it is a species of Gnophos, allied to obscuraria, but much darker and larger than the southern specimens: several persons who have seen them believe they are a distinct species, but this remains yet to be proved. North Wales seems particularly rich in Eupitheciæ, having met with fourteen species myself; three other species were shown to me by Mr. Weaver, when we met in Carnarvonshire, that I had not met with. In Tortrices and Tineæ I was less fortunate, probably owing to my collecting in the later months of the summer. The following list is all I consider worth recording:—

Stilbia anomala. On wing at dusk.
Luperina furva. At sugar.
Leucania conigera. On flowers of ragwort.
Spælotis præcox. Ditto.
„ cataleuca. On sugar, and on wing at mid-day.

Spælotis pyrophila. On flowers of ragwort.
Agrotis Ashworthii. At rest on limestone rocks.
Botys terrealis. By beating herbage on limestone rocks.
Gnophos, *nov. spec.* At rest on limestone rocks.
Emmelesia bifasciaria. On wing at dusk.
Eupithecia distinctaria.
„ pimpinellaria.
„ nanataria.
„ cognaria.
„ subfulvaria.
„ rufifasciaria.
Also two other species not yet named.

All the Eupitheciæ were either taken at rest or by beating for them.

Peronea permutana. By beating.
Sciaphila bellana. At rest on limestone rocks.
Eupœcilia atricapitana. By beating.
Crambus falsellus. On an old stone wall.
Tinea semifulvella. By beating.
Nemotois cupriacellus. On wing at mid-day.
Gelechia desertella. In old rabbit-holes.
„ politella. On wing at dusk.
„ artemisiella. On wing all day.
„ sequax. Ditto.
„ tæniolella. Ditto.
Laverna Staintoni. On wing at dusk.
Pterophorus plagiodactylus. On wing all day.

PS. In July I captured Plusia bractea and Exæreita Allisella; in November Crymodes Templi; all in Cheshire.—*S. Carter; 20, Lower Moseley Street, Manchester.*

Singular Swarm of Vanessa Urticæ in December.—The following notice of the capture of a swarm of Vanessa Urticæ on the 26th of December, 1855, at the farm of Mr. Banning, Monte Video, Ballacraine, Isle of Man, was sent me by that gentleman, together with the insects themselves:—" Whilst standing in my farm-yard on the day following Christmas-day, it being unusually fine and warm, I was suddenly astonished by the fall of more than a hundred of the accompanying butterflies. I commenced at once collecting them, and succeeded in securing more than sixty; these I have fed on sugar spread over cabbage-leaves and bran until now, and, to all appearances, those which still survive (more than forty in number) are thriving well, and in good condition.—*Alfred Rains; New Brighton, Cheshire, January* 19, 1856.

Remarks on Mr. Newman's Note relating to Argynnis Lathonia.—Mr. Newman's idea of appointing a triumvirate, "armed with scissors and absolute power," is a very good one, but I doubt much whether any will avail themselves of this *sciscitation*. My notion, when I penned the first note, was that some one, against whom the "grave and reverend" charge was made, would have been first in the field, and up to this time I am so far gratified to see such good sense displayed, whether real or assumed, in not seeking to add in print what is already in black and white. In some instances men are convicted by their silence, whilst in others they are condemned by their speech. The middle path, therefore, is difficult to travel over, yet it may be safely accomplished by those who don't always require to put on "seven-league boots" when they start.—*John Scott; South Stockton, Stockton-on-Tees, January* 1, 1856.

26. FE 56

To Entomologists.

MR. FOXCROFT begs to return his sincere thanks to the Trustees of the British Museum, the Nobility, Gentry and Clergymen, and also particularly to the Members of the Entomological Society, for the patronage he has received for a number of years, and takes the liberty of informing them and others that he intends making another journey into Scotland, for the purpose of collecting Insects during the Summer of 1856: from the 15th of March to the beginning of July, he purposes devoting to collecting in Scotland. Mr. Foxcroft intends spending the rest of the season in Wales and parts of England to the end of October, making the Season seven months and a half. Mr. Foxcroft, to enable him to carry out this plan, wishes to raise a sufficient sum by subscriptions of £1 3*s.* each Subscriber, who shall be entitled to two specimens of the Order he particularly wishes to obtain; the whole of the Insects collected to be shared in November, on Mr. F.'s return. The boxes in which the Insects are delivered to the Subscriber to be his property. Mr. F. hopes, by visiting different localities, to take many rare and new Species, thus affording an excellent opportunity to Gentlemen of obtaining desirables to their Collections.

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